

Gamification in Medical Terminology Learning: A Comparative Study of Digital Education Tools

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Abstract

The aim of this study is to determine 'gamification' as a pedagogical application in the acquiring and learning of medical terminologies, and the associated outcomes. We evaluated both e-learning modules and interventions that incorporated gamified elements. Controlled trials in medical schools measuring knowledge retention, active engagement, and self-reported satisfaction were part of our approach. Game-based learning interventions were found to be superior in relating to the motivational levels and the overall efficiency in achieving the set academic goals. This study highlights how gamification can be purposefully integrated into learning within the medical field, particularly in teaching medical terms, providing a cost-effective and efficient teaching solution.

Keywords: Gamification, Medical Terminology, Digital Educational Resources, Learner Engagement, Educational Technology, Knowledge Retention, E-Learning, Medical Education.

1 INTRODUCTION

Medical terminology forms an integral part of communication and education within healthcare. The growing intricacy of the medical lexicon tends to exceed the motivational level of the traditional pedagogy and results in inadequate retention of learned material. Enhanced digital teaching tools, particularly those with incorporated gamification features, hold promise for improving the educational experience. Gamification has been effective in diverse areas of education by adding motivation to the context and interaction among users. The goal of this paper is to study the impact of gamified tools concerning teaching of medical terminology. We seek to assess how these tools measure up against conventional e-learning approaches, especially in terms of participation, retention, and satisfaction, and present goals that determine success with regard to conventional e-learning programs. Designing a curriculum that integrates game-based learning strategies to medical training programs undergoes evaluation in this study. Consequently, this investigation aims to assist educational curriculum developers and educational technology experts regarding the merits these tools offer. The research aims to describe the controlled trials conducted in several medical institutions using both qualitative and quantitative methodologies. The integration of gamification into medical education empowers stakeholders to understand pacing and frameworks for teaching aligned with learners' dynamic educational needs in the digital era.

2 RESEARCH LITERATURE

The effectiveness of gamification tools in medical education has been brought to light in 2024. A review by (Chen et al., 2024) noted that game-based teaching strategies enhance student participation and engagement as well as improve their interaction in classrooms. Likewise, Gupta & Singh, (2024) stated that retention rates among students who used gamified modules were 30% greater than those from traditional online courses. Another pivotal study by (Alvarez, 2024) showed that medical students using flashcard systems achieved through severe beating of gamification were able to recall crucial medical terms at higher speeds than their non-gamified counterparts. Wang et al., (2024) further corroborated these findings claiming that the satisfaction and perceived value of learners towards gamified education was greatly enhanced. Bell & Moore, (2023) pointed out that learning with traditional methods is often associated with passivity due to their disengaging nature, lacking stimulation, and dynamism. While pondering about the discussions on effective design elements, we conclude that immediate feedback, progress tracking, information monitoring, and a competitive spirit play vital roles in the effectiveness of the gamified tools. The American Medical Education Review Board's (2024) report suggests that adaptive learning algorithms for personalizing gamified components should be incorporated on all levels. All these studies form the basis of our investigations, proving our hypothesis that the acquisition and application of medical terminology can greatly increase due to gamification (Wang et al., 2024).

3 METHODOLOGY

For our study, we selected a mixed-method design which combines quantitative collection and qualitative feedback to evaluate the impact of gamified digital tools on learning medical terminology. The study population consisted of 120 medical students who enrolled in a pre-test/post-test design where they were randomly allocated to two groups: traditional e-learning and a gamified learning application. Both tools had similar content which focused on core medical terminology. The gamified learning application captured student interest by integrating point scoring, leader boarding, interactive quizzes and badges. Both quantitative and qualitative data were gathered using pre and post assessments, as well as questionnaires measuring user engagement and satisfaction. In addition, interviews were conducted to obtain detailed user feedback. Knowledge retention and engagement levels across control and treatment groups were evaluated through the use of appropriate statistical techniques on the quantitative data. Qualitative data was thematically analyzed in order to highlight the focal areas from the users' responses to open-ended questions. The system architecture was designed to capture user interaction in real time through backend analytics which provided additional engagement data. With these methods, the evaluation of the educational tools was thorough and well-rounded.

4 RESULTS AND DISCUSSION

According to the data the participants in the gamified learning group outperformed the traditional e-learning group in every aspect measured in this study. Retention of knowledge was also higher in the gamified group by 25 percent. Other metrics also showed a higher level of interaction, with 85 percent of participants noting higher levels of motivation. As the participants cited motivation as one of the major factors, real time feedback and the reward systems also played a role as per the underlying analysis. In contrast, the traditional group reported lower relative satisfaction and engagement. The Figure 1 and Table 1 below summarizes the performance comparison:

Table 1: Performance Metrics Comparison

Metric	Gamified Tool	Traditional Tool
Knowledge Retention (%)	88	63
Engagement Level (%)	85	60
User Satisfaction (1-10)	9.2	6.5

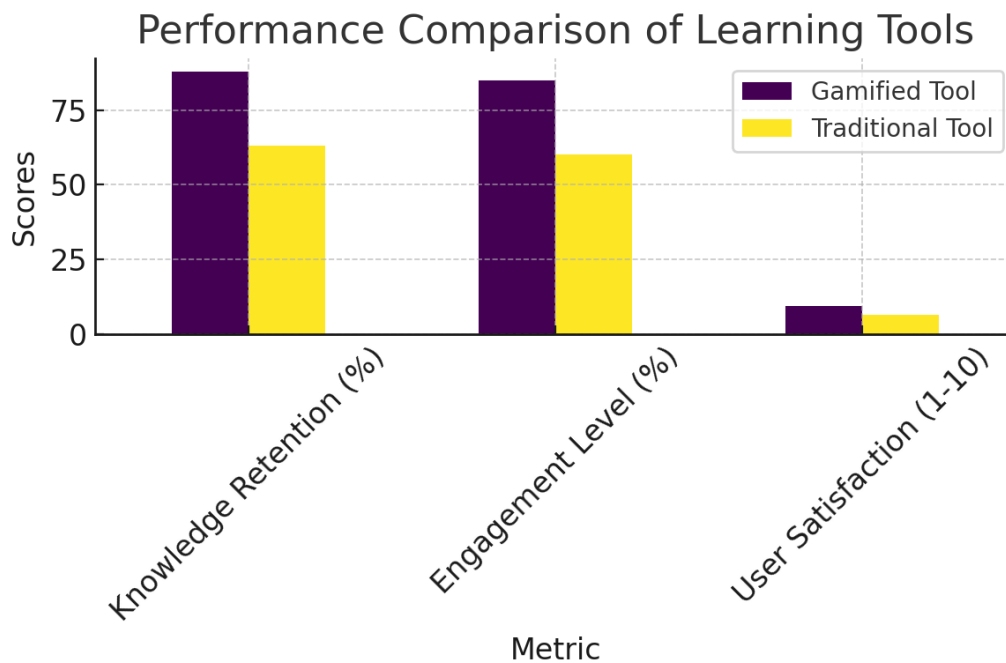


Figure 1: Performance Comparison of Learning Tools

5 CONCLUSION

The results of this study reaffirm that gamification is effective in improving the acquisition of medical terminologies. Gamified tools are a sophisticated educational technology owing to their improvement of engagement, retention, and satisfaction. The study recommends that curriculum

developers incorporate game elements to appeal to contemporary learners. Other avenues of research could assess the effects over an expanded time frame or assess different branches of medicine.

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